

NAVY MEDICINE

July-August 1998



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COVER: VADM Richard A. Nelson, MC, recently assumed command as the 33rd Surgeon General of the Navy and Chief of the Bureau of Medicine and Surgery. See page 7.

Correction

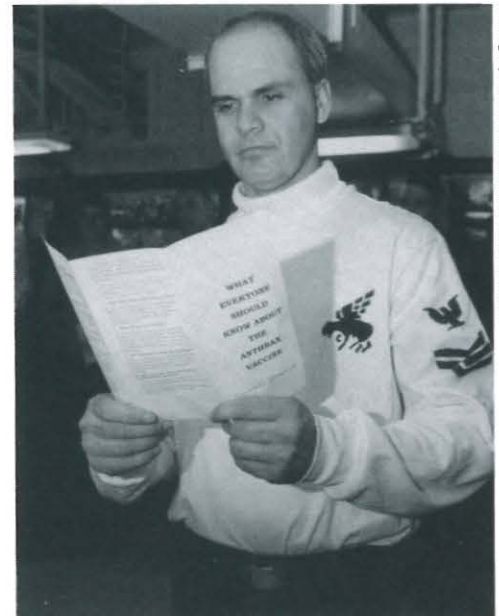
In the March-April issue on page 12, LCDR Craig M. Howard, MSC, USNR, was inadvertently omitted as an author. He is OCONUS Platform Manager assigned to MED-27, BUMED.

Combating the Threat of Anthrax

Aviation Structural Mechanic First Class David Snodgrass reads a Navy pamphlet on the anthrax vaccine. The pamphlet contains basic information answering questions such as:

- What is anthrax?
- Why vaccinate?
- How safe is this vaccine?

Anthrax is a disease normally associated with plant-eating animals. When anthrax is used as a biological weapon, infection occurs through inhaling the spores released in the air. Anthrax is considered the biological weapon most likely to be encountered because it is easy and cheap to produce in large quantities and spread over a large area. Vaccination stimulates the body's natural disease-fighting abilities to protect against diseases such as measles, mumps, and polio. The anthrax vaccine has been safely and routinely administered in the United States to high-risk populations, such as livestock handlers, since 1970.



Photographer's Mate Airman Robert Baker



Photographer's Mate Third Class Mike Larson

HMCS John Payhurst administers the first in a series of anthrax vaccinations to 1 of 6,000 Sailors aboard the aircraft carrier USS *John C. Stennis*, which is deployed to the Persian Gulf in support of Operation Southern Watch. The Joint Staff has determined the Persian Gulf to be a high-threat area for biological warfare, and all personnel deployed there are being vaccinated. The Secretary of Defense announced that all U.S. military forces, active and reserve, will be immunized against anthrax according to the following priorities:

- Personnel assigned to high-threat areas.
- Personnel identified and scheduled for deployment on an imminent or ongoing contingency operation to a high-threat area.



Professor Teams With Navy Doctors in Knee Research

Not too many mechanical engineers can say they're teamed up with the same doctors that performed knee surgery on the President of the United States. But, for the past 5 years, Professor Young Kwon from the Naval Postgraduate School, Monterey, CA, has been doing just that—assisting Navy doctors—CDR David Adkison, the lead surgeon for President Bill Clinton's surgery, and LCDR Marlene DeMaio—in researching different techniques to repair ligament injuries to the knee, which puts about 1,000 Sailors in pain each year, and forces a medical discharge from service for some.

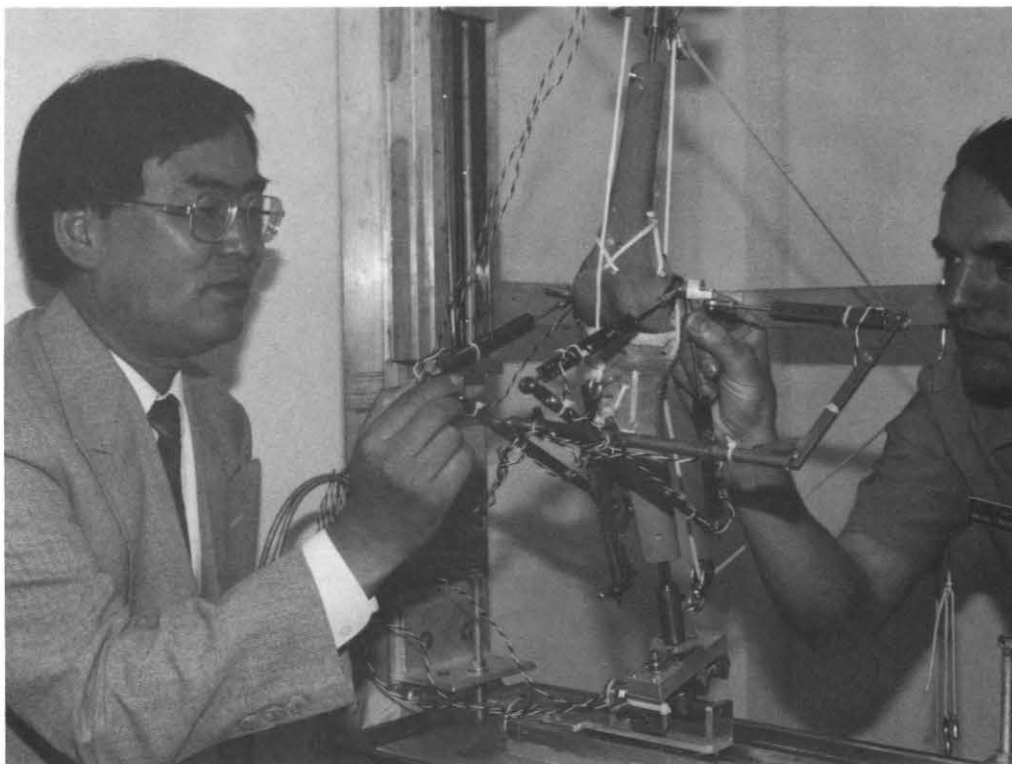
The trio's research involves measuring continuous knee motion as close as possible to the human body to find "characteristics" of the knee's rotation capabilities. This information will aid orthopaedic surgeons in repair of knee ligaments.

"Our goal is to characterize knee motions. So far, there

is no single technique that can characterize the knee once there is ligament failure. And, because everyone differs, there's no one surgical technique (to repair damaged ligaments) that is suitable for everyone," Kwon explained. "We have to understand knee behavior before repair can be done."

Kwon started this biomechanics "career" after Adkison and DeMaio solicited assistance from the postgraduate school. At the time, the doctors were assigned to Naval Hospital Oakland, CA, and called the school's mechanical engineering chairman for research assistance. Kwon volunteered, and the trio spent close to 2 years discussing and planning strategies. The next step moved their endeavors into a lab in the mechanical engineering building on the postgraduate school's campus.

So with guidance of the two doctors, Kwon and students began testing the ranges of motions on cadaverous knees



Mechanical Engineering Professor Young Kwon assists student LCDR Steven Parks with an adjustment on the testing jig.

to find set parameters for motions of the knee—"instantaneous axis rotation." They've found that this axis rotation is similar in different knees, meaning knees can be leaned to certain points in different directions, before ligament damage occurs.

"In the past, research looked at different angles of the knee, but our research looks at continuous motion," Kwon said. "We want to evaluate different ligament surgery techniques and compare them. Once a knee has been reconstructed, we want it to resume normal functions."

To test knee functions, the research team uses a computerized contraption that resembles a cross between a vice and one of those traction devices you see suspending heavy leg casts in hospital beds. This "jig" flexes the knee mechanically and the motions of the femur and tibia are measured continuously. It's this mechanical engineer-

ing design of the test jig that draws students into the program.

"This is something special. These students apply engineering principles—skills they're still learning—yet they're doing medical research," said Kwon, who admits he's always had an interest in the biomechanical engineering field, but until this project, never had the opportunity to work in it.

Obviously, the team hasn't been looking for a "few, good, volunteers" . . . at least not yet. They've been using cadaverous knees, which can be used repeatedly.

"Eventually, we'll have enough data to characterize each knee type," Kwon said. "Someday this information could be used to help surgeons repair knee injuries. That's our goal." □

—Story and photo by JO1 Diane Jacobs, Public Affairs Office, Naval Postgraduate School, Monterey, CA.

How Do We Know We Are Ready?

CDR Penny Turner, NC, USN

Readiness is the Enterprise. For the past several years Navy medicine has been adjusting its focus to keep pace with the changing defense environment. Decreased defense funding mandates we focus on the primary mission of readiness while continuing to provide peacetime health care to our beneficiaries. Part of our readiness reengineering effort seeks to

address issues spotlighted during Operations Desert Shield and Desert Storm. How are we doing with this reengineering effort? By what measure do we say we are ready?

In September 1997 VADM Harold M. Koenig, MC, Surgeon General of the Navy, appointed CDR Dan Snyder, MSC, Director of the Readiness Reengineering Task Force (RRTF) and

charged the group with implementing Total Health Care Support Readiness Requirements (THCSRR) readiness concepts. As part of the RRTF, the Evaluation Tiger Team is working on Navy medicine's readiness measures—a Navy medicine Status of Resources and Training System (SORTS).

SORTS is not a new idea. The Navy line has been using it for years. Navy

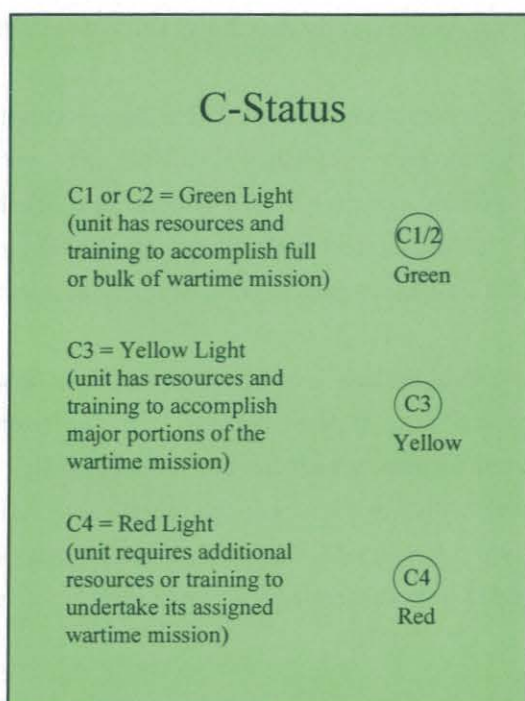


Figure 1

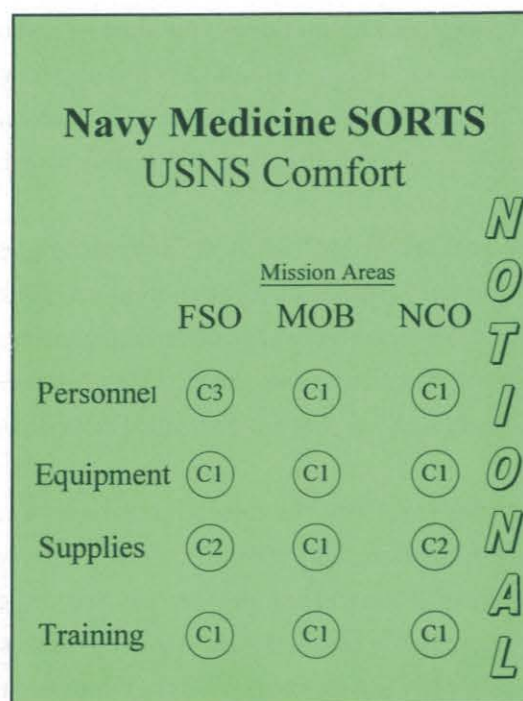


Figure 2

SORTS is a highly complex worldwide system that reports unit readiness levels for deployment in various mission categories. Reports include the readiness status of personnel, equipment, supplies, and training for the whole unit.(1) The Navy periodically reports SORTS data to the Joint Staff, who use the information in the Joint Monthly Readiness Report. SORTS' primary purpose is tracking and reporting wartime capability shortfalls. It also provides a means of contingency force selection based on SORTS ratings, moves resources between units, and detects readiness issue trends.(2)

Navy medicine doesn't have the resources to duplicate the line's SORT System, but the concept provides a useful mobilization platform readiness measure. The stoplight display, shown in Figure 1, provides a clear picture of platform readiness status. Using this as a starting point, the Evaluation Tiger Team has been developing a simplified SORT System to gather and display

mobilization readiness information about our major platforms. These are the T-AHs, fleet hospitals, casualty receiving treatment ships (CRTSs) (LHAs and LHDs), Marine Corps units, and three overseas medical treatment facilities (U.S. Naval Hospital Guam, U.S. Naval Hospital Okinawa, and U.S. Naval Hospital Yokosuka). The combat or "C" status reflects prospective platform readiness status (not the readiness status of the source hospital).

Several information sources contribute to readiness status determination. Many platforms staffed by Navy medicine already report data into the Navy SORT System. Equipment and supply reports are routinely sent to the Navy for the T-AHs and fleet hospitals. Why do we need a separate Navy medicine SORTS—isn't that redundant? The Navy SORTS includes some medical platforms but doesn't provide much Navy medicine readiness information; it necessarily concentrates on the deployment readiness of the fleet

and Fleet Marine Force. Navy medicine's leadership must have personnel and training details to determine readiness.

Assigning the *right individuals* with the *right training* on the *right equipment* has long been a challenge. As our information systems improve, we are refining our understanding of readiness issues through data tracking and analysis. A Navy medicine SORTS display provides the vehicle to convey both summary and detail information.

Figures 2 through 5 illustrate this concept. The notional SORTS display shows a C3 status for the T-AHs. Figure 3 reveals C3 status is actually on USNS *Comfort*. Figure 4 shows *Comfort* is only C3 in the area of personnel, and Figure 5 shows the problem is a shortage of critical care nurses. Figure 6 defines the mission categories and resource areas shown on the displays.

The Standard Personnel Management System (SPMS) tracks personnel information for mobilization. This is a

Navy Medicine SORTS T-AHs		
	Overall Rating	
		N
		O
USNS Comfort	C3	T
		I
USNS Mercy	C1	O
		N
		A
		L

Figure 3

Navy Medicine SORTS Summary		
	Overall Rating	
		N
T-AHs	C3	O
Fleet Hospitals	C2	T
CRTSs	C2	I
USMC Augment	C1	O
OCNUS Augment	C1	N
		A
Casualty Care	C2	L

Figure 4

SORTS Terms

- Mission Areas
 - **FSO** - Fleet Support Operations
(primary mobilization mission for Navy medicine)
 - **MOB** - Mobility (ability of the ship to get underway)
 - **NCO** - Non-Combatant Operations
- Resource Areas
 - **Personnel** (includes availability of personnel as well as the accomplishment of administrative and training requirements)
 - **Equipment** (Operability of both medical and non-medical equipment)
 - **Supplies** (level of mission critical supplies on hand)
 - **Training** (accomplishment of required unit training)

Figure 5

Navy Medicine SORTS

USNS Comfort Personnel -- FSO

Type Personnel	M-Status	Degradation Reason
• Lab Techs	1	
• X-Ray Techs	1	
• OR Techs	1	
• Biomed Equip Repair Techs	1	
• Pharmacy Techs	1	
• Other Enlisted Medical	1	
• Aviation Boswain's Mates	1	
• Electronic Techs	1	
• Mess Specialists	1	
• Radiomen	1	
• Machinist Mates	1	
• Store Keepers	1	
• Other Non-Med Enlisted	1	
• Physician - Surgical Specialist	1	
• Physician Non-Surgical	1	
• Anesthesiologists/Anesthetists	1	
• Critical Care Nurses	3	Shortage - not available
• Operating Room Nurses	1	
• Emergency Room Nurses	1	
• Staff/Ward Nurses	1	
• Laboratory Technologists	1	
• Pharmacists	1	
• Maxillofacial Surgeons	1	
• Other medical personnel	1	
• Line Officers	1	
• Supply Corp Officers	1	

**N
O
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Figure 6

legacy system and will be phased out. Until the replacement system is deployed, it is crucial we maintain the SPMS data base to monitor readiness. As the development of Navy medicine SORTS progresses, we hope to establish a link between SPMS (and later its replacement system) and a SORTS display program that will automatically capture personnel data as an aggregate measure of platform readiness.

The Navy medicine SORTS incorporates the tiered readiness concept. A few years ago the Navy recognized that immediate deployment readiness for all units was generating unnecessary expenditures. A tiered readiness concept uses more realistic mobilization and deployment time frames. Navy medicine SORTS will measure readiness using the tiered structure as well.

Most of the concepts displayed in this illustration are being used in line Navy SORTS. With Navy medicine SORTS we can more closely monitor the readiness details and issues for the Medical Department leadership. The Evaluation Tiger Team will continue refining the display criteria. We hope the system will be ready for use in 6-9 months. Comments and ideas for the development of Navy medicine SORTS would be greatly appreciated and may be forwarded to PBTurner@US.med.navy.mil.

References

1. Naval Warfare Publication NWP-10-1-11 (Rev. A), Status of Resources and Training System (SORTS), Chief of Naval Operations; September 1987.
2. Paying for Military Readiness and Upkeep: Trends in Operations and Maintenance Spending, Congressional Budget Office; September 1997. □

CDR Turner is Special Assistant to the Surgeon General for Readiness Reengineering (MED-09R), Bureau of Medicine and Surgery, Washington, DC, and Director, Readiness Reengineering Task Force (OPNAV-931B1).

NMC San Diego's Skipper Nominated for Surgeon General

RADM Richard A. Nelson, Commander, Naval Medical Center (NMC), San Diego, CA, has been nominated to become the Navy's newest Surgeon General.

Secretary of Defense William S. Cohen announced that President Clinton had nominated Nelson for appointment to the grade of vice admiral and assignment as Chief of the Bureau of Medicine and Surgery and Surgeon General. Nelson has served as the NMC San Diego Commander and Lead Agent, TRICARE Region Nine since August 1993.

"I'm humbled by the prospects of the job and what it means," he said. "I look forward to the opportunity of being one of the leaders of our Navy and Marine Corps medical personnel, as well as being their advocate within the leadership of the Department of Defense, the Navy, and our public."

Nelson was born near Perkin, OK. He received a bachelor of science degree from Oklahoma State University and a doctor of medicine degree from the University of Oklahoma. He completed a residency in occupational medicine at the University of Cincinnati.

Nelson entered the Navy in 1967 with initial duty at Naval Hospital Corpus Christi, TX, and Naval Ammunition Depot, McAlester, OK. His other career highlights include command of the Navy Environmental Health Center in 1974 when it was located in Cincinnati, OH, and again in 1981 after it was relocated to Norfolk, VA. He was Commanding Officer at Naval Hospital Bremerton, WA, from 1989 to 1991. Before assuming his present position, RADM Nelson served as Fleet Surgeon, Command Surgeon for the U.S. Atlantic Command and Medical Advisor to Supreme Allied Command Atlantic.

Nelson is certified in occupational medicine by the American Board of Preventive Medicine and is a member of the American College of Occupational and Environmental Medicine and the Association of Military Surgeons of the United States.

—Reprinted from BUMED MEDNEWS-98-21

Taking Care to the Deckplates: The MSC Way

LT Mark J. Stevenson, MSC, USN

For the past 2 years the Office of the Medical Service Corps at the Bureau of Medicine and Surgery (BUMED), Washington, DC, has sponsored several demonstration projects that evaluated the effectiveness of assigning one physical therapist and physical therapy technician and one clinical psychologist and psychiatry technician aboard aircraft carriers. The idea of putting Medical Service Corps clinicians at sea was originally generated by requests from the fleet.

Working with OPNAV Codes N-1, N-88, N-931, and the fleet to support the Surgeon General's initiative of taking health care to the deckplates, the officer and enlisted billets on the carriers have been established with the first specialist reporting to USS *Abraham Lincoln* in May 1998. "This initiative provides the opportunity to significantly enhance the quality of life and readiness in the carrier battle groups and their air wings by improving health care available to the crew," commented RADM Ed Phillips, MSC, Director of the Medical Service Corps. He further noted, "We realize that recommending crew expansion when the Navy is downsizing appeared to be out of step. However, we believe this initiative is clearly a case of subtraction by addition. As crews become smaller it will become even more important to keep them healthy and on the job. These health care providers and technicians will do just that!"

The clinical psychologist will serve as the ship's primary mental health provider supervising the ship's CAAC and tobacco cessation programs, provide suicide awareness and stress management training, coordinate with the Family Services Center (FSC) while in port, conduct Critical Incident Stress Debriefs (CISD), and serve as an invaluable counselor to the chain of command. The clinical psychologists have the credentials to diagnose authoritatively motivation, evaluate and deal with uncomfortable situations, and

are particularly skilled in assessing/treating problems of addictive behavior.

The physical therapist will serve as the ship's primary musculoskeletal injuries/screening provider and conduct health promotion training to include low back/knee work hardening, ergonomic analysis, and spinal rehabilitation. They come to their ship with an extensive background in anatomy, physiology, neurology, kinesiology, hydrotherapy, exercise physiology, sports medicine, soft tissue/joint mobilization, research methods, and problem-solving ability.

LT Helen Napier, MSC, a clinical psychologist who served aboard USS *Kitty Hawk* (CV-63) from August 1996 to February 1997 said, "Subjectively, this deployment has been the most rewarding experience I've had in the Navy. There is simply *no* other way to comprehend the daily shipboard lifestyle than to live it. The overall psychological atmosphere and stressors of the ship change frequently in response to deployment events and stages. Shorter TAD to the ship would undoubtedly give an artificial snapshot of deployment rigors. Even minor changes such as E-mail and Sailor phone outages dramatically affect the crew. Hitting 'hump day' (midpoint of the cruise) immediately refocused the perspective of the crew toward home and the subsequent problems to follow; relieving some problems while exacerbating others. Any Sailor suffering homesickness can look ill in a doctor's office in CONUS. However, by living here over time, I developed a finer tuned threshold for what is normal given the ships environment and stage/event of deployment."

LT Napier further noted, "As a professional, I will hopefully serve my seagoing patients with a more informed and mature clinical eye. Most importantly, I had fun and I now feel a greater sense of belonging to the blue-water Navy. As compared to my former perspective of carrying a

'hectic' clinic schedule, I supported a heavier caseload and worked longer hours."

During this deployment LT Napier conducted 160 new patient evaluations, 272 patient followup sessions, and 104 crew contacts for group therapy/education. Of these, only seven needed medical evacuation to CONUS for further care due to the severity of their illness (including psychosis, clinical depression with suicide attempt, and alcohol dependence with medical complications).

The most beneficial aspect of providing treatment under way will be teaching patients to cope with their problems while remaining involved in their jobs. This will help give the crew the conviction that they can survive adversity and keep on going. In a less therapeutic role, but helpful to the ship, the clinical psychologist will work closely with legal, EEO, NCIS, and the chain of command to handle crewmembers with behavioral problems that would have previously been considered "psyche" cases and medically evacuated to CONUS. LT Napier commented, "Overall, the project has seemed extremely successful and I am grateful for the opportunity. I will strongly encourage my fellow psychologists to fight for the chance to deploy."

CDR Homer Moore, MC, senior medical officer (SMO) on board USS *Kitty Hawk* noted, "If I were the SMO on some other carrier, I would simply *insist* on having a psychologist on board my ship too. Having a clinical psychologist in our medical department transformed my very existence as an SMO. But, besides the benefits that have accrued to me personally, the single most significant justification for having an embarked psychologist is that it unequivocally has served to keep players on the field."

LT Lanny Boswell, MSC, a physical therapist, served on board USS *Enterprise* (CVN-65) from June to December 1996. During his deployment LT Boswell concentrated on three areas: (1) as a sick call provider for the evaluation and early access to crewmembers sustaining musculoskeletal injuries, (2) the rehabilitation of injured personnel and their return to full duty status as quickly as possible, and (3) the prevention of new injuries by conducting work space analysis, injury prevention classes, and properly rehabilitate past injuries.

The presence of a physical therapist resulted in a savings of 1,344 light-duty days when compared to the same number of patients seen without rehabilitation services, decreased orthopedic medical evacuations from the average of 36 (last two Mediterranean deployed carriers) to 9, decreased the nonsurgical orthopedic medical evacuations from 16 (last deployment) to 0, broadened the range and quality of available care thereby increasing the fleet Sailors quality of life, elevated the skill level of the ship's medical

department in the management of musculoskeletal injuries, and elevated the knowledge base of the crew toward the prevention of musculoskeletal injuries through work-hardening classes and work space ergonomic analysis.

LT Todd Sander, MSC, a physical therapist who deployed on board USS *John Kennedy* (CV-67) from April to October 1997 commented, "This endeavor has been one of the most challenging and rewarding assignments of my career in the Navy. The crew of USS *John F. Kennedy* has been most supportive of my mission." Using his credentials as a musculoskeletal screener, LT Sander was able to provide immediate physical therapy services to over 500 Sailors and Marines with over 1,500 patient contacts. During this deployment LT Sanders saved over \$50,000 and thousands of work hours for Sailors and Marines in the carrier battle group for nonsurgical orthopedic medical evacuations. Not one Sailor or Marine was sent to CONUS specifically for this reason.

While on board *Kennedy* LT Sander implemented a health promotions program, coordinated a 1-day health fair, and developed a set of exercise injury-prevention videos that aired across the closed-circuit television aboard the ship. Working with the physical therapy clinic at U.S. Naval Hospital Sigonella, Italy, LT Sander was able to get several postsurgical patients from the battle group returned to their ships to complete their rehabilitation and be a productive member of the crew. This included an EW3 who was an essential member of the Combat Systems department during Arabian Gulf exercises.

The following phased implementation plan was developed with N-88, N-931, and BUMED to ensure maximum success by allowing for growth in the inventory, establishment of a manageable detailing profile, and integration of these officers into the ship's that deploy first: FY98: USS *Enterprise*, USS *Abraham Lincoln*, and USS *Carl Vinson*. FY99: USS *John F. Kennedy*, USS *Kitty Hawk*, and USS *Theodore Roosevelt*. FY00: USS *John C. Stennis*, USS *Dwight D. Eisenhower*, USS *Harry S. Truman*, and USS *George Washington*. FY01: USS *Nimitz*.

RADM R.L. Christenson, Head, Aviation Manpower and Training Branch noted, "These health care providers will not only improve the quality of life for our Sailors by offering a broader range of patient/medical care, but at the same time, increase efficiency and improve operational readiness." □

LT Stevenson is assigned to the Office of the Medical Service Corps (00MSC), Bureau of Medicine and Surgery, Washington, DC.

Readiness Concerns in Operational Anesthesia

LCOL Jerry L. Brown, MC, USAR

LCOL Eugene J. Murdock, Jr., NC, USAR

MAJ Dewey Galeas, NC, USA (Ret.)

CAPT Arthur M. Smith, MC, USNR

The armed services are undertaking the most sweeping force reduction seen in 40 years. Inevitably, the attrition of military manpower will be matched by a concomitant decrease in supporting resources. Recent DOD studies have concluded that the size of the current active duty medical force is greater than twice that required for meeting the threats of the post-Cold War period. Major reductions in military medical personnel strength are the expected outcome of this force realignment.

As we then prepare to conduct military operations in two major regional conflicts simultaneously, utilizing the support of a downsized military medical cadre, medical operational readiness inevitably assumes a greater priority. Resources to support this responsibility must obviously be sustained, including the equipment, supplies, personnel, and training necessary for ensuring implementation of the medical readiness mission.

The administration of field anesthesia to combat casualties is an important component of the medical readiness mission. Furthermore, natural and man-made disasters occur almost daily, often producing large numbers of casualties that rapidly overwhelm even the most sophisticated emergency medical system. Since military anesthesia providers are frequently called upon for humanitarian support around the globe, their training must include a solid foundation in emergency anesthetic care under suboptimal conditions, even in the absence of the threat of combat.

Although medical specialization and good training imply adaptability, an anesthesia provider (physician anesthesiologist or certified registered nurse anesthetist (CRNA)) trained within the last 15 years may have difficulty comfortably providing safe surgical anesthesia without the security of the sophisticated equipment, drugs, and compressed gases that are now considered essential for modern anesthe-

sia. For military anesthesia providers, it is important that their competence be extended to facilitate adaptation to environmentally and logistically adverse situations where such extensive technical and logistical support may not be available.

Fundamental Components of Operational Anesthesia. Familiarity with the implements and techniques of operational anesthesia is a critical component of military medical readiness. The techniques of total intravenous anesthesia as well as local nerve blocks and regional anesthesia may be very useful under certain conditions. To complete their formal training in anesthesia care delivery within the austere environment, military anesthesia providers also need training in use of the field equipment presently available for general anesthesia, as well as techniques required for managing the impact of both altitude and high environmental temperature upon anesthesia administration.

Total Intravenous Anesthesia. This is the most common method available for producing anesthesia in the field during short surgical procedures such as the amputation of a trapped unsalvageable limb. Despite its attractive simplicity, however, the technique requires continued practice and familiarity to achieve sufficient expertise. Administered by competent personnel, it has proven very satisfactory over a large number of cases. Apparatus required includes sterile syringes, needles, infusion apparatus, and drugs. The requirement for multiple essential drugs, all of which need to be kept sterile, is also a special disadvantage in the austere, logistically constrained setting.

Regional and Local Anesthesia. Effective local anesthesia nerve blocks and major regional anesthesia (such as spinal and epidural techniques) require careful planning and constant practice. These realities often preclude their use in field situations for other than the provision of pain relief for

muscle and skeletal injuries. The equipment required is generally compact and portable, but needs to be kept sterile. Disposable syringes, needles, and microcatheters of practically every configuration are generally available in peacetime facilities, as well as a wide variety of anesthetic preparations. Only a limited selection of implements and agents may be available in the operational setting, however. Versatility in the capabilities of the anesthesia provider is crucial.

Field Anesthesia Machine. The decades-old Field Anesthesia Machine or FAM 885A has been utilized with great proficiency by U.S. military anesthesia personnel since the Vietnam conflict. The triservice FAM 885A was developed to provide a field-hardened portable anesthetizing device for operational (field) surgery. It has since been a standard component of field medical equipment, and for years the principal form of anesthesia equipment within the surgical facilities aboard the larger Navy amphibious assault ships. It is also found in expeditionary medical units such as fleet hospitals and Marine surgical companies. The unit's design maximizes portability, simplicity, and agent utility at the expense of contemporary peacetime safety systems. It has since been a standard component of field medical equipment and is found in expeditionary medical units such as fleet hospitals and Marine surgical companies. Although the large amphibious assault ships have their two primary operating rooms outfitted with EXCEL 210 units, the secondary operating rooms (two on each LHA and four on each LHD) are outfitted with the FAM 885A with a respiratory gas monitor attached.

The FAM 885A is designed with a Vernitrol vaporizer that will allow the administration of any number of volatile anesthetics, from ether to isoflurane. While the Vernitrol is capable of giving a lethal dose of anesthetic if not properly monitored and adjusted, and lacks contemporary fail-safe system integrity monitors that generate alarms in the event of a system failure, it should be noted that even during the Vietnam conflict its predecessor (FAM 885) proved to be a very reliable and durable instrument with an exceptional safety record. Nevertheless, as with all technical components, those charged with responsibility for utilizing the equipment require "hands-on" instruction and experience in its operation.

Drawover Anesthesia. Most standard anesthesia machines, including the FAM 885A, are dependent upon medical gases for vaporization of the volatile anesthesia agent. An adequate supply of cylinders of compressed anesthetic gases, most notably oxygen, is often a major logistical problem in the setting of combat. Drawover anesthetic systems are the most versatile solution for

meeting requirements of field anesthesia. Known concentrations of anesthesia agents can be delivered, and there is no absolute requirement for a compressed gas supply, since air can be used as the carrier gas. This minimizes or eliminates the need to transport heavy oxygen cylinders.

The oldest method for providing inhalational anesthesia involved breathing air, perhaps enriched with oxygen if available, drawn over a volatile anesthetic agent such as ether. This "draw over" principle was similarly employed during the earlier era when a handkerchief containing anesthetic was held to the patient's face. Since few instruments for undertaking this type of anesthesia were calibrated to deliver a known measured concentration of anesthetic agent, the anesthetist or anesthesiologist depended primarily upon his/her observations of a patient's general vital signs and condition, rather than upon specific measurements from sophisticated monitoring devices, such as are now in use in modern facilities.

The drawover system is a portable anesthetic apparatus that is small, light, portable, and simple to use, but sufficiently versatile to meet the more sophisticated anesthetic requirements of a field or base hospital. It may also be required to operate under conditions of reduced barometric pressure (i.e., in aircraft or mountainous regions), and its performance has been well documented between sea level and a height of 4,000 meters.

During the Soviet invasion of Hungary in 1956, oxygen supplies were depleted within 3 days. Subsequently, in the United States, 400 drawover devices were purchased by the New York State Civil Defense Department in preparation for a possible catastrophe. Drawover systems were standard equipment for U.S. Civil Defense hospital units in the 1960's, and anesthesia provider trainees at that time were taught to administer anesthesia without using supplies of compressed gases.

Medical units of the Israeli Armed Forces used drawover units during the Yom Kippur War in October 1973. British Armed Forces medical units involved in the high-temperature environment of Oman, and the ongoing conflict in Northern Ireland, have used them extensively.

During May 1982 British naval forces regained control of the Falkland Islands and provided the first example of prolonged use of the drawover apparatus under field conditions. On that occasion, air superiority was not assured, and helicopter evacuation of wounded was not always possible in a timely fashion. Argentinian air attacks on supply ships further hindered the replenishment of consumable goods. Instruments designed to deliver anesthesia by using the simplified "draw over" technique were effectively utilized by British medical teams in more than half of their

surgical cases. Two anesthetists from the Royal Army Medical Corps were part of the initial Parachute Field Surgical Team assigned to provide operative and anesthetic care on the Islands. The anesthetists reported that 133 inhalation anesthetic procedures were performed with this apparatus. The distribution of injuries is important to note. In keeping with the historical record from most previous military conflicts, 65 percent of all injuries were to the extremities, and 75 percent of all general anesthetics were for cleaning and removal of debris and dead tissue from these wounds. Only 4 percent of cases required abdominal exploration, and surgical procedures within the chest composed only 1 percent of the total.

Variations of drawover anesthesia equipment are still in regular use within many Third World countries of Africa and Asia. Likewise, it is still utilized by some armies as a field apparatus, where it is employed for simple as well as complex surgery, including major trauma cases. During the 1991 Persian Gulf war, drawover devices were used in U.S. military field hospitals when supplies of compressed oxygen were in short supply. The spartan but easily transportable Universal PAC drawover anesthesia equipment was effectively utilized by U.S. Army medical personnel attached to Forward Area Surgical Teams (FASTs) during Operation Just Cause in Panama, during operations in Honduras, the Persian Gulf, and elsewhere.

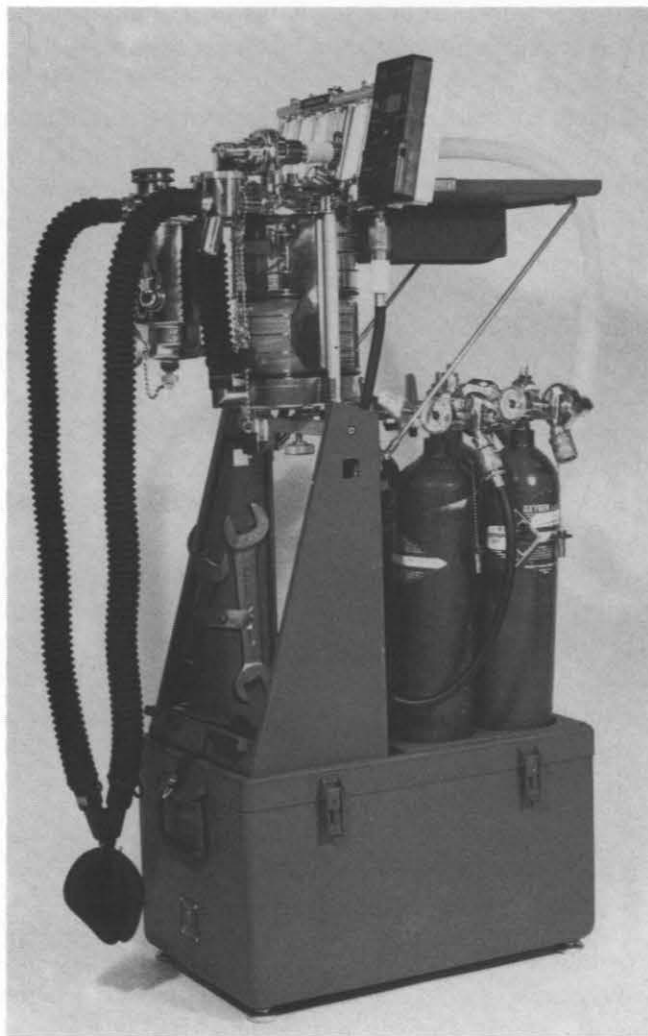
Drawover anesthesia is thus a useful concept that expands the delivery of anesthetic care in the field, both in the civilian and military settings. Recent armed conflicts, natural disasters, and ongoing humanitarian missions to developing countries have renewed interest in these devices. Ironically, in the United States the drawover vaporizer is available only to the military,

who in turn are forbidden to use it in their own hospitals during peacetime!

Current Paradox

During Operations Desert Shield and Desert Storm, the General Accounting Office (GAO) reported that many military physicians were exposed for the first time to the array of technology of 1970's and early 1980's vintage contained within deployable medical systems (DEPMEDS) or fleet hospitals. Since the equipment overtly lacked the incorporation of contemporary technical advances, health care personnel often judged it to be of poor quality, and occasionally characterized it as archaic. Having been infrequently offered the opportunity for adequate prior training upon the field equipment contained within DEPMEDS, many physicians bypassed the official supply system and resorted to telephone contact with private resources in CONUS, hoping to obtain personal delivery of "up-to-date"

medical equipment. Was this a reflection upon the adequacy, durability, and safety of the equipment? No doubt it was primarily a result of inadequate preparation of medical personnel for functioning within the "austere but adequate" field environment of combat. The Services are pursuing replacement of the FAM 885A with a "commercial off-the-shelf" product with modifications* to improve field survivability. The intent is to have a replacement unit that is comparable to the technology used day to day in our fixed facilities. This decision is made from the understanding that production of MILSPEC medical systems is not feasible in today's environment when the re-



Field anesthesia machine unpacked and ready for use

*The new contract is anticipated to be awarded during the fourth quarter of FY98. The Marines have targeted funding to begin replacement of their FAM 885A's in FY98. Fleet units will be supported in FY99.

sulting medical system has limited commercial application. To ensure fielding of equipment that is logistically supportable throughout its lifecycle we must turn to available commercial products. Consequently, military medical services are left with two equally compelling mandates: realistically modifying existing equipment to upgrade efficiency and safety, and implementing mandatory training upon deployable anesthesia equipment in such a manner that training requirements are met, yet patient safety is not compromised. The compelling nature of these mandates is further underlined by the reality that due to retirement and attrition, many of those anesthesia providers who have previously achieved competence in the use of this equipment are no longer active members of the armed forces.

It is acknowledged that despite its successful field testing during the Falklands conflict, long-term use of the drawover vaporizer system is indeed tiring for an anesthesia provider. Furthermore, it is relatively inefficient as an anesthesia technique. When utilizing this equipment, the anesthetist must accept the reality that lower levels of oxygenation are achieved in the blood of patients receiving such anesthesia. And this may complicate combat injuries where blood loss and dehydration of casualties have already occurred. Given its simplicity, portability, and proven effectiveness in a population of relatively young patients, however, it remains all that is available considering the current emphasis upon FAST deployments in combat contingencies. Nevertheless, it does remain a difficult and austere anesthetic technique, which requires practice before safe utilization can be assured.

Training Imperatives

The design requirements for anesthesia equipment commonly used in the operational theater mandate that it be compact, light, durable, and capable of being carried to any part of the world on very short notice. Furthermore, it must be versatile, capable of working over a wide range of temperatures and altitudes, and require a minimum of maintenance. Rarely, will the sophisticated anesthesia technology of the modern surgical suite match or satisfy such criteria. Indeed, the Field Anesthesia Machine has a virtually untarnished record of physical reliability, and patient injuries which have occurred during its use can be traced either to improper use of the equipment or poor maintenance and calibration. The latter is a risk shared by all anesthetizing devices. As such, anesthesia providers must be capable of functioning without "cutting edge" technology, and must learn to monitor the status of their patients utilizing skills not commonly required in modern peacetime surgical facilities.

To truly achieve operational medical readiness, every

deployable military anesthesia care provider must receive sufficient training in use of the present field equipment, and become facile in its operation. Anesthetists who have not worked with this device are at a disadvantage when mobilized and deployed to a forward surgical facility. This training must be accomplished despite the caveats issued by the FDA and the manufacturer; warnings which are primarily attempts at avoiding liability issues. In fact, such training has already been randomly accomplished at various Army medical training facilities.

In some Army nurse anesthesia training programs, for example, a requirement existed for students to perform a minimum of 10 cases upon the 885A Field Anesthesia Machine. In at least one major Army medical center, during the early phases of preparation for deployment to Operations Desert Shield and Desert Storm, some Army providers were indeed trained to perform anesthesia upon active duty personnel using the Field Anesthesia Machine. During surgical procedures the breathing circuit from the device was placed in series with modern hospital-based monitoring equipment, including disconnect and hypoxia alarms, to ensure patient safety until student competence was assured.

To meet the training requirements for providing safe anesthesia care to our Soldiers, Sailors, and Marines in all environments, military medical leadership must acknowledge its responsibility for training practitioners on the available anesthesia equipment, as well as field techniques, before their utilization is required. The need for this is indisputable. It cannot be overemphasized that in order to avoid making and repeating fatal mistakes in future operational activities, experience with these techniques must be acquired before their use is required in an emergency. Clearly, legal obstacles must be identified and formally overcome. Likewise, innovative means for facilitating training must be encouraged, such as the previous programs of the triservice Joint Medical Readiness Training Command at Fort Sam Houston, TX, which provided a combat anesthesia training program aimed primarily at Special Forces medics. In our current quest for medical readiness, these should be priority issues for military medical leadership and must be promptly and realistically addressed. □

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The Force Surgeon at Work

LCDR Maureen Connolly Olson, MSC, USNR

On board the U.S. Navy's Administrative Support Unit Southwest Asia (ASUSWA), stands a small trailer belonging to the U.S. Naval Forces Central Command's Force Surgeon. Outside, the midmorning temperature has already reached a shirt-soaking 110°F. Inside, CAPT Elaine Holmes, MC, Force Surgeon; LCDR Johnnie Johnson, MSC, Deputy Force Surgeon; HMCS(SW) Thomas R. Kane, Force IDC; and HM1 Pamela E. Paige, Force Medical Assistant, all clad in Desert Camouflage Utilities (DCUs), are hard at work.

As both the USNAVCENT Force Surgeon and the USCENCOM Force Surgeon Forward, CAPT Holmes is the principal medical advisor and spe-

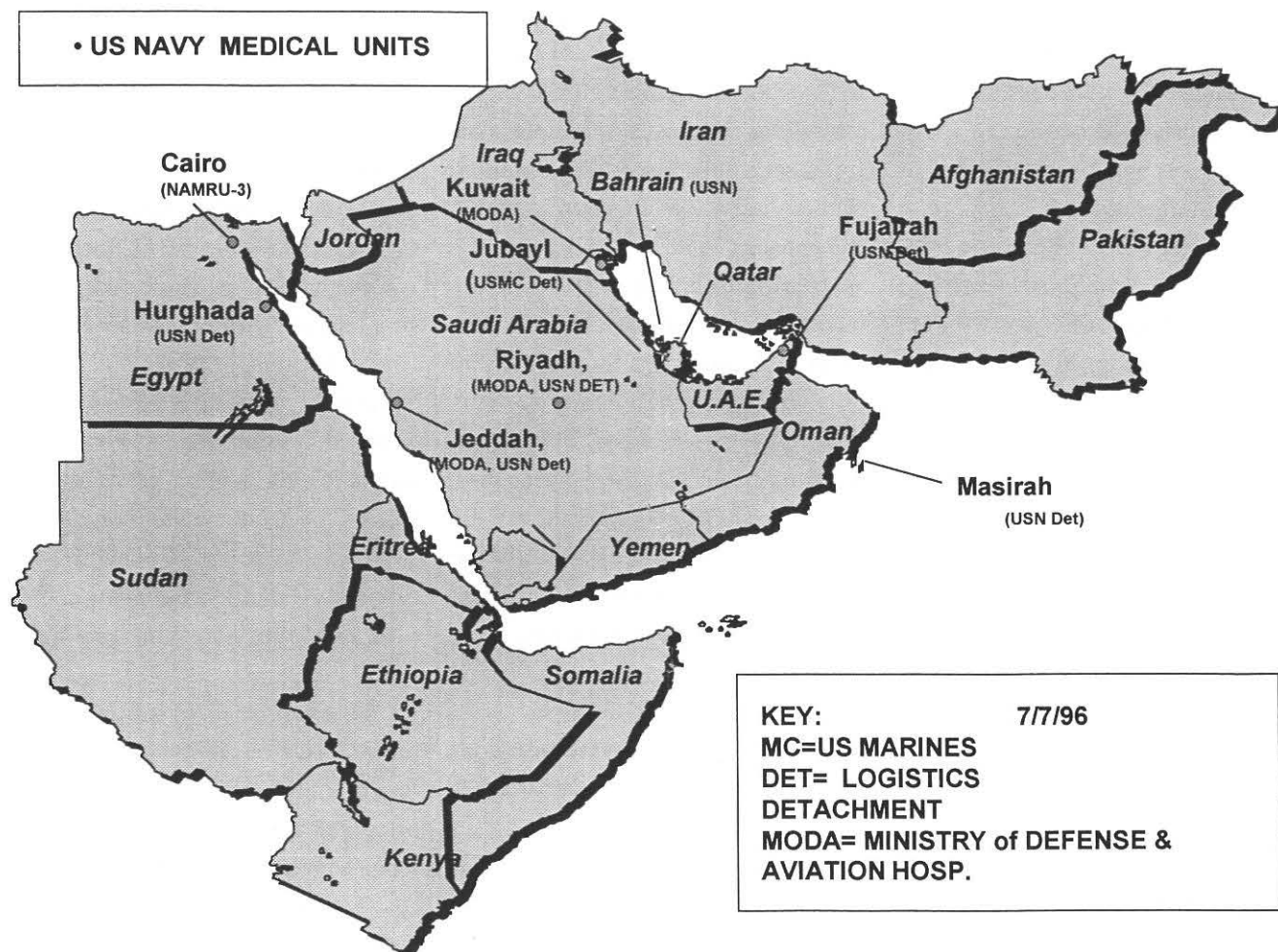
cial assistant to the Commander, United States Naval Forces Central Command (COMUSNAVCENT) and is involved in the provision of all Area of Responsibility (AOR) theater medical care. One look at a Middle East map will tell you that responsibility for this expansive area is a tough job. Encompassing 7.5 million miles of land and sea, AOR includes the 20 countries of Afghanistan, Bahrain, Djibouti, Egypt, Ethiopia, Eritrea, Jordan, Iran, Iraq, Kenya, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, Seychelles, Somalia, Sudan, United Arab Emirates (UAE), and Yemen.

The Office of the Force Surgeon was created in September 1987 in response to the concern of inadequate medical support for a major or multi-

casualty situation within this dynamic, high-threat operational area. Originally located on board the flagship USS *LaSalle*, the Force Surgeon, along with the rest of the NAVCENT staff, was brought ashore in March 1993 to occupy its current location in Manama, Bahrain.

CAPT Holmes and her staff are responsible for providing medical guidance for all AOR patient care and medical intelligence issues. They determine theater health care requirements during both peacetime and contingencies. They deal with a host of theater preventive medicine issues and requirements and provide guidance to afloat units in the areas of direct patient care, medical guidance for port visits, and theater medical assets. They inter-

• US NAVY MEDICAL UNITS



face constantly with American Embassy personnel, host nation medical personnel, and other U.S. military health care facilities and providers. "If it's medical this office is involved. There are many unique clinical challenges in this region—trauma, CBW threat, infectious diseases, and heat-related illnesses. We've been involved with a number of life-threatening diseases, cases involving gunshot wounds, and severe cases of Chlamydia pneumoniae and necrotizing fasciitis in this AOR," CAPT Holmes said.

Demanding and challenging even under the best of circumstances, the

rigors of these responsibilities are exacerbated by the unique military, political, and cultural dynamics of each of the 20 AOR countries. All decisions must be tempered and handled with extreme sensitivity. "The majority of the Middle Eastern countries in this AOR are governed by Muslim law. We have to respect their religious and cultural beliefs and practices, while at the same time, assure timely and adequate medical care for our service members," said CAPT Holmes about this important issue. "Often times these sensitivities do create a significant challenge for us. For example, many of

the countries throughout the AOR do not permit blood or blood products to travel across their land or air space. That is just one of the many logistical issues we face on a daily basis. The Muslim month-long celebration of Ramadan also creates a whole new set of challenges that we have to plan for."

CAPT Holmes was quick to dispel the widely held belief that medical care within the AOR is different than that of American or Western facilities. "This office has traveled to almost every country, assessing firsthand the level of care available throughout our AOR.

We have found that several areas in the Gulf have large city or municipal hospitals that provide care comparable to American standards and are capable of handling most any type of medical or surgical emergency.

Here in Bahrain, we have an agreement with the International Hospital of Bahrain (IHB) and American Mission Hospital (AMH) to provide primary and surgical care for our forces ashore and afloat, and for their family members. Most of the physicians at these facilities are Western-trained, and all ASU SWA and NAVCENT physicians are granted courtesy privileges for providing collaborative care to those U.S. military personnel and their family members who are patients there." The Healthcare Support Office (HSO) in Norfolk, VA, has evaluated these facilities in the past and will be invited to visit both of these hospitals again this year to provide an updated assessment.

The Force Surgeon's office has identified other hospitals throughout the AOR that offer specialties in neonatology, neurosurgery, trauma, burns, cardiac, dental, and nuclear medicine. Particularly noteworthy is an eight-person steel hyperbaric chamber in Al Jubail, Saudi Arabia, and the recently opened American Hospital in Dubai, United Arab Emirate, a 100-bed community-type hospital that was built with U.S. standards in mind.

In addition to identifying host nation support facilities in the AOR, CAPT Holmes and her staff are also kept busy with port visits to all U.S. Navy ships that enter the Arabian Gulf. Upon entering the Gulf, each ship receives an INCHOP brief, which is either conducted at pierside in Bahrain for the

smaller surface combatants and logistics ships, or out at sea where the staff is transported by helo to the larger aircraft carriers and amphibious platforms set at anchorage. "Communication is vital to our mission here. By participating in the INCHOP briefs, we are able to talk directly with each ship's medical department to discuss the services and assistance this office can provide," said CAPT Holmes. "It is important that we establish constant communication with them during their time in the AOR. We want them to be able to consult with us easily and have the opportunity to discuss any medical concerns or problems they may have encountered during their cruise," added CAPT Holmes.

The staff routinely has the pleasure of hosting many distinguished visitors to the area. In March of this year, they were honored with a visit from VADM Harold M. Koenig, U.S. Navy Surgeon General, and his staff. During his 2-day visit, the Surgeon General had an opportunity to see firsthand the host nation support facilities available in Bahrain. He visited three Bahraini hospitals and the ASU SWA medical department and held an Admiral's Call for the medical staff. VADM Koenig and his staff are taking the lead in bringing advanced technology to the theater. Soon the Force Surgeon's office will be able to consult with naval ships, AOR military medical facilities, and participating hospitals on a variety of medical related issues.

Other distinguished visitors to Bahrain have included the Central Command (CENTCOM) Surgeon from Tampa, FL; Army Central Command (ARCENT) Surgeon from Ku-

wait; Central Command Air Force (CENTAF) Surgeon from Dhahran; U.S. Military Training Mission (USMTM) Medical Officer from Saudi Arabia; Office of Program Management Saudi Arabia National Guard (OPMSANG) Medical Officer, Saudi Arabia; and the regional medical officers and nurses from American Embassies throughout the AOR. The Force Surgeon's office also hosted an Area Medical Conference in February for medical leaders of all services in the AOR. The AOR medical leaders are working together to discuss joint contingencies, share information and advice, and coordinate joint training opportunities.

"This job is an extraordinary opportunity providing quality medical care at 'the tip of the spear.' This AOR has a large number of endemic medical challenges. When you add the cultural challenges, distance, and requirements for force protection, coordinating medical care for our over 20,000 troops in the AOR is an incredible challenge," CAPT Holmes point out. "We have a superb medical and profession staff—the folks at ASU, those on board the ships, and the units of other services—and outstanding support from the CENTCOM Surgeon's office, the component's surgeons, and our technical experts at BUMED. We, along with the excellent work of our joint colleagues in the AOR, are literally the 'line in the sand'—in an AOR of constant change and challenge." □

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Successes of *Kernel Blitz '97* Medical Play

Neil B. Carey, Ph.D.
Robert R. Levy, Ph.D.
Federico Garcia, Ph.D.
Cori Rattelman
James Grogan
Derek Trunkey, Ph.D.

Medical play in *Kernel Blitz '97* was one of the largest amphibious medical exercises ever performed; it included Pacific Fleet, Amphibious Group III, and 1st Marine Expeditionary Force (I MEF) surgeon's offices in planning and execution. Expanding on medical play from *Kernel Blitz '95*,^(1,2) KB '97 included USNS *Mercy* exercised for the first time as a 250-bed hospital, Army Blackhawk helicopters for medevac, complete wartime medical manning for USS *Tarawa*, and several new telemedicine (TM) demonstrations.

The CINCPACFLT Surgeon and I MEF tasked the Center for Naval Analyses (CNA) to analyze several aspects of medical play in KB '97: supply augmentation of *Mercy*, personnel augmentation aboard all platforms, telemedicine demonstrations, the blood program, and oxygen. This article will start with our analyses of supplies aboard *Mercy*, and then move on to personnel augmentation. Next, we will consider telemedicine, the blood program, and oxygen.



Federico Garcia

USNS *Mercy* deployed as a 250-bed hospital for the first time in an exercise.

Supply Augmentation on *Mercy*. Our effort focused on whether medical supplies would be available to the hospital ship within 5 days. To do this, we first calculated the wartime requirement by multiplying the 5-day 1,000-bed requirement by 6 to get a 30-day requirement. The difference—a 25-day, 1,000-bed requirement—was the amount that needed to be received by the ship within the 5-day period.

We used preliminary data from an Industrial Preparedness Planning (IPP) survey that was being conducted by the Defense Supply Center, Philadelphia (DSCP), PA. DSCP is part of the Defense Logistics Agency (DLA), primarily responsible for food, clothing, and medical supplies. The IPP

survey asks industry manufacturers to determine whether they could supply the military with specific quantities of medical supplies within various time periods. DSCP sent out about 20,000 surveys on about 8,700 “go to war” items. At the time of this study, only about 1,000 (5 percent) had been received so far. Clearly, our analyses were preliminary.

Our analyses matched the Navy Stock Numbers (NSNs) of the services' requirements against the results of the survey so far. The analyses showed that, of the 130 mission-essential items, 97 (75 percent) would be available in sufficient quantities. Of the total items, 66 percent could be provided on time. Note that we excluded

The medical battalion got 97 percent of its augments, all of whom were assigned to augment a FSSG.

nonconsumables, such as equipment, from these calculations. Although these numbers are preliminary (i.e., based on early returns of surveys), they give us an idea of how many items may require further analyses. For example, once all the survey results are in, it is necessary to look at whether substitutions are possible for the 25 to 33 percent of items that appear not to be available or of insufficient quantities. We did not address whether alternative supplies—for example, bandages slightly longer than those on the Authorized Medical Allowance List (AMAL), or different dosages of the same medicine—would be sufficient to supply Navy and Marine Corps needs.

Personnel Augmentation. We addressed two major questions: (1) Were billets filled by appropriate personnel? and (2) What other problems arose in providing personnel?

Mercy was planned to be staffed at the 250-bed level. We used the activity manpower document (AMD) as a “standard” to determine how well the augmentation process performed. The AMD implies that total staff should be 731—a full-time staff of 58, which would then be augmented by 673 for deployment as a 250-bed hospital. The data we received from Naval Medical Center (NMC), San Diego, CA, imply that, because of actual “shortfalls” (un-



filled billets), they didn't receive all 673 but came close, with 658, or 98 percent (see table). Virtually all of the remainder were supplied by other naval commands or the reserves. *Mercy's* officer manning compared favorably with the AMD. *Mercy* lacked only three Medical Service Corps officers and two Nurse Corps officers.

The medical battalion got 97 percent (141/145) of its augments, all of whom were assigned to augment a Fleet Service Support Group (FSSG), so they did quite well, too. We were told that the surgical company is planned to be augmented from NMC San Diego, in the event of a real contingency. Almost all of the 141 augmentees came from San Diego; only 5 personnel came from other medical treatment facilities. In fact, all of the 141 personnel who participated in KB '97 were assigned to an FSSG platform—excellent performance for the augmentation system.

Overall, the personnel augmentation system worked well for Kernel Blitz. One test went very well—the boarding of augmentees on *Mercy* was accomplished in just a few hours on the evening the ship docked in San Diego.

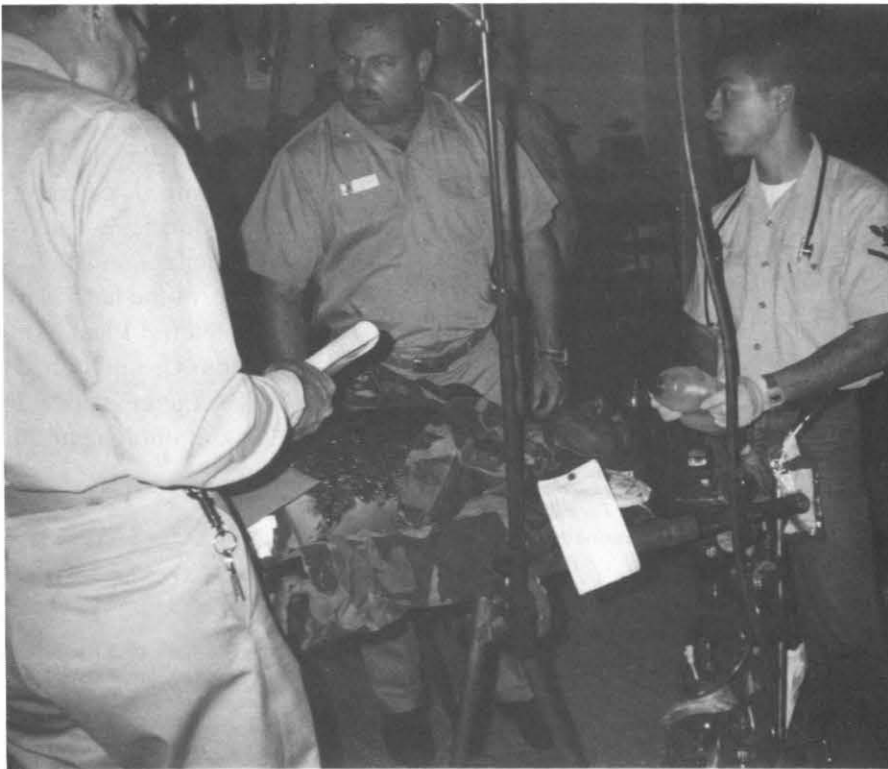
An attempt to send augmentees to their particular platform or class of platforms as assigned by MPAS was fairly successful.

Another success story was the credentialing of licensed independent paraprofessionals (physicians, nurse practitioners, nurse anesthetists, physical therapists, and psychologists) who were part of *Mercy's* augmented Full Operating Status (FOS) staff. During prior exercises involving *Mercy* (MERC-EXes), the MTF *Mercy* commanding officer, the platform's privileging authority, had exercised the process of obtaining Credentials Transfer Briefs from the primary sourcing command (NMC San Diego), for all medical staff augmentees, and then accomplishing platform credentialing at the start of each exercise. This finely honed process worked flawlessly during Kernel Blitz so that medical staff members were able to practice during the exercise, taking care of the few crewmembers requiring medical attention on a daily basis, and being available in the event of a true emergency.

Telemedicine Demonstrations. Telemedicine is an umbrella term that covers various technologies used to

Comparing *Mercy's* AMD With Officer Manning AMD Actual On Board

Medical Corps	40	40
Dental Corps	2	2
Medical Service Corps	17	14
Nurse Corps	87	85
Total	146	141



Moulaged casualty receiving treatment aboard USS *Tarawa*.

process health services information electronically and transmit this information over long distances. During Kernel Blitz '97, telemedicine included technologies for:

- Consulting with other facilities
 - Plain old telephone system (POTS)
 - E-mail
- Automating medical administrative functions. These include the following:
 - The Composite Health Care System (CHCS)
 - The Multi-Technology Automated Reader Card (MARC)
 - The Medical Information Engineering Prototype System (MIEPS)
 - The Mass Casualty Medical Training and Evaluation System (MMT&E)
 - The Defense Blood Standard System (DBSS)
 - The Mobile Medical Monitor
- Digital diagnostic equipment. There was limited use of a digital dermoscope, ophthalmoscope, and telepathology.

We focused on some of the issues

about telemedicine in a heightened defense posture: What are the benefits of telemedicine? To what extent does it improve the efficiency of medical care delivery? What is its impact on patient administration? We seek to answer these questions based on a telemedicine survey as well as interviews with medical and administrative staff at different platforms.

To assess the potential demand for telemedicine in wartime, we prepared a self-administering survey. The Control Evaluation Groups (CEGs) on each platform incorporated the survey into their evaluations; they completed surveys for casualties received on their platforms during KB '97. We obtained 404 surveys from the medical battalion, the fleet hospital, *Tarawa*, *Peleliu*, and *Mercy*—one for every casualty except those with very mild illnesses or injuries.

The survey listed telemedicine equipment planned for each platform on Naval Medical Information Management Center's (NMIMC) concept of

operations for telemedicine play in Kernel Blitz '97. The survey collected a variety of information about telemedicine, including patient algorithm and the impact of TM on quality of care (as measured by its effect on diagnosis and treatment. The survey also collected information on other potential benefits of TM, such as the avoidance of death and permanent incapacitation. The survey also asked for information on the potential effect of TM in expediting and avoiding medevacs.

For TM equipment not integrated into the medical play, we asked the CEGs to determine the impact of TM if it had been integrated. If the CEGs felt that a telemedicine modality not listed on the survey would have some impact, they were to write in the name of the technology.

From the survey, we found that CHCS's patient admissions module was a valuable tool for patient admission and tracking. CHCS's E-mail capability was useful for internal communication.

Nevertheless, some implementation issues need to be addressed. For example, on *Mercy*, the network connection plug on the back of the computer was very sensitive. Several times during the exercise, it was accidentally hit, resulting in a connection loss. It took almost a half hour to reestablish a connection to CHCS. Because of bandwidth constraints, CHCS files were not always transmitted over the offboard server to remote sites. While there is a minimum requirement of 38.4 kbs, the maximum transmission rate was 2.4 kbs at times. The latter problem is being addressed by connecting the INMARSAT antennae directly into the fiber optic LAN.

MARC was seen as an improvement over the forms used by corpsmen in the field because of MARC's greater legibility. This is congruent with other studies in this area.^(3,4,5,6) However, some exercise participants pointed out that locating and removing MARC could be harmful to patients. One of the big advantages of MARC is that it does not rely on communications. Communications were problematic during Kernel Blitz.

MIEPS saved time for those platforms that were able to access the web. However, not all platforms had web access because of communication difficulties.

In conclusion, administrative uses of telemedicine and low-end communications for consultation seemed quite useful in Kernel Blitz, but the high-end clinical technologies, such as the scopes, were less helpful. These findings agree with a study just completed by CNA on peacetime uses of telemedicine⁽⁷⁾ and an earlier CNA study on wartime communications for Navy medicine in support of the Marines.⁽⁸⁾

Blood and Oxygen. We now turn to the questions we asked about the blood program and oxygen: Did blood play stress the system? What limits the oxygen supply?

The patient flow in Kernel Blitz was smaller than the system's capacity, so the blood system was not stressed. It seemed that fewer or smaller transfusions were needed in Kernel Blitz, but we couldn't assess how much different the requirement was. We computed 0.8 unit per patient per platform in Kernel Blitz, and blood officers on *Mercy* estimated a need for 2.7 units per casualty on their platform. However, *Mercy* is probably more surgi-



CHCS was used aboard USS *Tarawa* as one of several telemedicine demonstrations.

cally intensive than are two other Kernel Blitz platforms, *Tarawa* and the surgical company.

In Kernel Blitz '95, the LHA ran out of oxygen very quickly. In Kernel Blitz '97, we asked whether *Mercy* could supply the medical oxygen needs of an LHA. The answer is that the hospital ship operating at the 250-bed level could supply its own oxygen and, depending on patient demand, produce some O₂ for an amphibious ship. However, as the O₂ plants are currently configured, *Mercy* can barely meet its oxygen needs at the 1,000-bed level. Because of this, plans are under way for installation of new oxygen storage tanks that will expand *Mercy*'s liquid oxygen storage capability to 2.5 times its current (spring 1998) level. With this new storage capability, *Mercy* could possibly supply oxygen to other ships even while operating at the 1,000-bed level.

Conclusion

We believe that Kernel Blitz '97 provided a unique opportunity for Navy medicine to coordinate with the line, giving nonclinical training. This separates Kernel Blitz from other "in-house" training exercises, such as MERCEX,

which concentrate more on clinical training.

KB '97 was a success, and we believe that medical should play in Kernel Blitz again. The benefits to Navy medicine—in visibility and coordination—are worth the hard work from Pacific Fleet, Amphibious Group III, and I MEF surgeon's offices to plan and implement this exercise.

References

1. Andrus KL, Taylor JK, Carey NB. Navy medicine in Kernel Blitz '95. *Nav Med*. November-December 1995; 86:6-9.
2. Carey NB, Levy RR, Garcia F, Rattelman C, Grogan J, Trunkey D. *Medical Play in Kernel Blitz '97: Findings and Recommendations*. CNA Annotated Briefing 97-66; January 1998 (Revised).
3. Konoske PJ, Dobbins RW, Gauker ED. MARC ES: a computer program for estimating medical information storage requirements. *Milit Med*. January 1998; 163:49-55.
4. Wilcox W, Pugh W. *Evaluation of Revised Field Medical Card for Navy and Marine Corps*. Technical Report No. 90-12. San Diego, CA: Naval Health Research Center; 1990.
5. Galarneau M, Wilcox W. *Field Evaluation of an Electronic Battlefield Combat Casualty Medical Data Collection Device (MEDTAG)*. Technical Report No. 93-31. San Diego, CA: Naval Health Research Center; 1993.
6. MARC, Multi-Technology Automated Reader Card, Mass Casualty Exercise Report. Final draft. Arlington, VA: Readiness and Deployable System Division, Office of Medical Functional Integration Management; 1995.
7. Garcia F, Stoloff P. *A Cost-Benefit Analysis of Shipboard Telemedicine*. CNA Research Memorandum 97-66; June 1997.
8. Carey NB, Rattelman CR, Nguyen H. *Information Requirements in Future Medical Operations*. CNA Research Memorandum 96-70; October 1996. □

Dr. Carey is currently director for the Center for Naval Analyses study *Satisfaction and Availability of Healthcare Afloat* at the CNA Corporation, Alexandria, VA. Dr. Levy is the CNA scientific analyst to N-093. Dr. Garcia is a manpower analyst at CNA; he recently conducted a cost-benefit analysis of shipboard telemedicine. Cori Rattelman is the CNA scientific analyst to N-931. James Grogan is a computer programmer at CNA. Dr. Trunkey is an analyst in CNA's infrastructure program.

Caring for Your People: “Career Talks”

CAPT A.A. de Savorgnani, NC, USN

How prepared are you to take care of your people? Perhaps better than you estimate, for regardless of specialty, rate/rank, or length of service, all military health care professionals have completed a preparatory course, sometimes including several degrees, and usually a varying period of experience. These credentials may certainly provide a foundation for you to inform and inspire others to pursue a similar career path.

Recognizing the power of informal professional mentoring, in early 1997 at Naval Hospital Lemoore, CA, we decided to review all the entry interview forms completed by new staff members during the previous year. These forms included both short- and long-term career goals for each individual. Next, we listed the names and workplaces of those with similar professional goals according to the area of interest.

Twenty personnel were interested in a nursing career, 14 in the field of medicine, 12 in health administration, 9 in a physician assistant role, and 8 in physical therapy. In addition, 17 of our new staff expressed interest in a variety of medical specialties while 10 wanted to pursue a nursing specialty.

Our command career counselors (officer and enlisted) and Education and Training Department collaborated to present a series of 17 “Career Talks.”

The priority of topics was determined by the number of staff members interested in each area. Thus career fields with greatest expressed interest became the first discussed.

We decided to schedule the talks weekly from 12:00 to 12:30 p.m. in a command conference room. Participants were encouraged to bring a brown bag lunch and a friend. Hospital directors helped identify staff professionals interested in presenting either individually or in a panel discussion. In one case, the Ancillary Services Department held an open house in a “drug fair” forum to provide information about “C” schools and various ancillary specialties. At least 2 weeks before each Career Talk colorful flyers were posted, general invitations were sent out via E-mail and Plan of the Week, and all personnel who had indicated a similar career interest received personal invitations from the counselors. Attendance rosters and critiques helped to document interest levels and perceived value of each presentation.

Overall, attendees were enthusiastic and appreciative concerning Career Talks. They “strongly agreed” that beneficial information for career planning was provided and often felt they could have used the guidance earlier in their careers. One member commented, “Let’s encourage our junior troops to attend this valuable training!” Another

noted, “This information is not common knowledge and more people need to know about the job possibilities.” Both presenters and attendees responded very positively to the outreach experience. Attendees were encouraged to seek further assistance/career mentoring from presenters as other questions or decision making might require.

Based on our favorable experience in the initial series of Career Talks, we decided to repeat the process yearly especially for the benefit of new staff members. Additionally, we extended our marketing to other active duty members on base via the local Plan of the Week, base newspaper, and cable channel. We are also planning to provide the series to our branch clinics and other interested West Coast sites via video teleconferencing.

Through this program as health care professionals, we hope to guide and assist many juniors to “follow their own special star.” You may likewise develop your own program to ensure a new generation of professionals from our military ranks. □

When this article was written CAPT de Savorgnani was Acting Commanding Officer of Naval Hospital Lemoore, CA. She is currently Commanding Officer of U.S. Naval Medical Clinics, UK, London.

The Navy Nurse Corps

Esther V. Hasson, R.N.

Although the Navy Nurse Corps was established by an act of Congress on 13 May 1908, it was not until 18 Aug of that year that the first Superintendent, Esther Voorhees Hasson, took the oath of office. She was Superintendent of the Nurse Corps from 1908 to 1911. Within a year of her oath, Hasson wrote the following article for the American Journal of Nursing [volume 9, March 1909:410-415], and gave a prescient perspective on leadership and character for Navy nurses then and now. Hasson served as a contract nurse for the Army during the Spanish-American War in 1898. Following her tour as Superintendent of the Navy Nurse Corps, she served at an Army field hospital in France during World War I and later worked for the Bureau of Veterans Affairs in Palo Alto, CA.

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Early in May of 1898 four women graduate nurses left Washington for Key West, Florida, under orders from the Surgeon-General

of the Army to report to the medical officer in command of the military hospital at that place for such duty as he might assign to them. Little did the nurses of this country think, at the time, of the far-reaching results of this order and that these women were the nucleus around which would form, first the corps of contract nurses, and later on, in 1901, the permanent organization of the Army Nurse Corps as it exists today. Their plunge into this (to the average nurse of that date) unknown field of work was like unto the traditional pebble cast into the sea of military nursing. The tiny ripples set in motion have spread out in gradually increasing circles until the little group of women on the extreme outer edge who at present represent the nurse corps of the Navy are already beginning to wonder upon what shores the last ripples will break.

Although the Army Nurse Corps was distinctly the product of war, the Navy corps is the indirect outcome of its proven worth and efficiency, not only in time of great national emergency, but of peace as well. Mrs.

Kinney has ably written up the preliminary work of legislation from the first bill (drafted by Medical Director Boyd, USN) which, had it proved acceptable to the Senate Committee on Naval Affairs, would have given us at once all of the advantages which must now come slowly and only as the result of special legislation; to the bill of February, 1908, which authorized a corps of trained women nurses for the Navy with the same pay, allowances, emoluments and privileges as are now, or may hereafter be, allowed for the nurse corps of the Army, so that it is not necessary to enter into any recapitulation of those details.

The interval of time between the introduction into Congress of these two bills represents about five years, and during this period of waiting the Surgeon General of the Navy and his assistants in the Bureau of Medicine and Surgery never once lost sight of the coming of the women nurses into the Navy, so that when, on the eighteenth of last August, I entered upon the duties of superintendent of the corps I found already under way a

broad general plan of organization. Roughly outlined it provided that all nurses eligible for appointment must be graduates of a general hospital giving a course of instruction covering a period of at least two years, and if coming from the states where registration is in force they must also be registered nurses.

All applicants will be required to pass a rigid physical and mental examination, and for the present, at least, the latter will invariably be held in Washington. The examination is required in all cases irrespective of whether the applicant has had previous Government service, either civil or military. Candidates whose qualifications reach the required standard will receive appointment with as little delay as possible after examination. The first few months of service will invariably be spent at the Naval Medical School Hospital in Washington, and after this term of trial, the nurses will be distributed to the various naval hospitals in the United States, Japan, the Philippines and Hawaii where it is deemed advisable to station women nurses.

The work of organization is to be very gradual and for the present the corps will be expanded at the rate of only about ten nurses every six months, but as the work becomes thoroughly systematized it is hoped to progress more rapidly. This plan is so eminently practical and well adapted to the needs of the service that it at present forms the solid base upon which it only remains to build up the details.

The examination for entrance is both written and oral and will include questions on the following subjects: gen-

eral nursing, materia medica and toxicology, surgical nursing, first aid, and practical dietetics with special reference to the preparation of invalid diet.

During the period spent in the naval hospital in Washington, nurses will be expected to inform themselves in regard to the rules, regulations and etiquette of the service, also of the different degrees of rank with insignia of same, not alone of the commissioned officers, but of the warrant and petty officers as well. Head nurse positions will in all cases be filled by promotions from the grade of nurse.

As all of the nurses (including the superintendent) are new to the ways of the service, and the service is equally new to the ways of the woman nurse, this first six months is regarded largely as an experimental period by both sides. As it draws to a close such regulations will be drawn up for the future government of the corps as

actual experience may prove to be desirable and necessary.

As each group of nurses leaves Washington for some other post of duty, a copy of these regulations will be furnished the chief nurse of command of the hospital for which the nurses are destined. In this the duties of the nurse will be as clearly defined as it is ever possible to define such duties. In this way we hope to make the nursing in our eighteen general hospitals somewhat uniform, so that when ordered from one to the other the nurse will know about the conditions she will encounter in regard to scope of work, hours of duty, duration and frequency of night details, personal privileges, etc. Any such regulations must of necessity be very faulty and inadequate at first, but by constant revision it is hoped to make them as perfectly adapted to such varied conditions as general regulations can ever be.

BUMED Archives



Esther V. Hasson, R.N.

One of the principal duties of the woman nurse in the Navy will be the bedside instruction of the hospital apprentice in the practical essentials of nursing, and for this reason she must be thoroughly conversant with the head nurse routine of a ward. When treatments, baths, or medications come due it is not expected or desired that she will always give these herself, but it will be her duty to see that the apprentices attached to the ward carry out the orders promptly and intelligently. This arrangement does not, however, absolve the nurse in any way from doing the actual nursing work whenever necessary, but is in a line with the general principle instilled into her from first to last, and which she is expected to always keep upper-

most in her mind. I mean the improvement of the apprentices to whom the bulk of the nursing of the Navy afloat will always fall, for it is not the intention of the Surgeon General to station women nurses on any but hospital ships.

The first few months of service is, as it were, a period of probation during which the nurse will be under observation as to her suitability for naval nursing. To be dropped from the corps at the end of this time may not, and in most cases will not, imply anything derogatory to her character or even to the professional ability of the nurse, as it will usually merely mean that she is lacking in the peculiar qualities requisite in work of this nature, namely: the cheerful disposition that accepts the ups and downs incidental to changes of station; that adapts itself easily to new environment; that accepts the undesirable detail without complaint and confidently looks forward to the better luck that will surely come next time. Above all she must possess in the highest degree the quiet dignity of bearing which alone can command respect from the apprentices or male nurses whom she must instruct. Although she possesses all else, and yet lacks this one quality, she had best seek another vocation at once as she would be absolutely useless for the work we wish her to do. The ability to get on with others will also be a very valuable adjunct. Ample authority will be given the nurse in all that pertains to the nursing, but we all know that there are women who can produce good results and maintain discipline without keeping things constantly in a state of turmoil. In a training school when a pupil nurse proves unsatisfactory another can easily be found to take her place, but with the hospital apprentice it is different, for the Navy is always far short of the number required, from which it will readily be seen that the woman who can inspire the male nurses

with a pride in their work and a desire to learn, and who at the same time can reduce to a minimum the friction always incidental to a change in the old order of things, will be the most valuable woman for naval work. Failure to get on harmoniously with co-workers of the corps would be another decided drawback to success. In other words, dignity, self-control and courtesy are the keynotes to the situation. And now in conclusion a few words as to the selecting and appointing of the nurses.

Upon application either to the Surgeon General of the Navy or the superintendent of the corps, the circular of information will be mailed to all who request it. In it is contained the form to be used for making formal application for permission to take the examination. This application should invariably be addressed to the Surgeon General; it is turned over by him to the superintendent for a thorough investigation of the applicant's school, credentials, etc. If satisfactory, it is then placed in the general application file for possible reference at a later date, as the corps is to be expanded very gradually, and in time of peace it will probably never number more than a hundred members. It will readily be seen that only a small number of the many desirable applications received can be considered when selecting candidates for the examinations, which for the present will be held in Washington only. As the expense of travelling to, and of subsistence while there must be borne by the applicant, I have thus far only summoned the number of women actually required for immediate need. In case of failure, or of the non-appearance of a candidate, another examination is at once held to supply the deficiency.

The successful ones will receive appointment with but little delay. It is impossible to say how long this method

will be continued, as I hope e'er long that some arrangement will be made which will enable applicants to take the examination at some designated city in their own states.

Before leaving the subject of applications and appointments I wish to say that all letters requesting information in regard to the corps may be addressed either to the Surgeon General of the Navy or to the superintendent, but it is unnecessary to address both on the same subject, as has frequently been done. As a matter of fact it is one of the duties of the superintendent to reply to all letters concerning the corps, irrespective of address.

It is too soon as yet to outline the scope of the work or to make predictions as to the future of the corps, but it is my most earnest hope to make it a dignified, respected body of women, governed largely by that feeling of *esprit de corps* without which no rules ever devised will be of avail to keep us free from all that approaches scandal or disagreeable comment.

Undoubtedly the future status of the Navy corps will rest largely in the hands of its members, and especially is this true of the first nurses. If they are content with low standards either professionally, morally, or socially the status of the corps will be fixed for all time. Future women will accept the standard set by us now without question; if it be high they will rise to it, if it be low they will with equal facility drop to its level.

We nurses who come into the nursing service of the Navy during this first year of its existence are the pioneers, and it rests with us to make the traditions and to set the pace for those who are to follow, and so upon our shoulders rests a great responsibility. I am sure that the nursing profession of the country will extend to us its hearty good wishes for success in our undertaking. □

Leona Jackson:

Fourth Director of the Nurse Corps

CAPT Patricia M. Collins, NC, USNR

CAPT Wilma Leona Class Jackson, NC (Ret.), fourth Director of the Navy Nurse Corps from 1954 to 1958 and former prisoner of war during World War II, died at the age of 88 on 23 Mar 1998, at the VA Hospice in Dayton, OH.

Born Wilma Leona Class in Union, OH, on 1 Sept 1909, the future CAPT Jackson graduated from the nursing program at the Miami Valley Hospital, Dayton, OH. Married at age 22 and mother of a son by age 24, Leona Jackson was divorced shortly before she joined the Navy. Confident that her son would have a good childhood with her parents, Leona, as she preferred to be called, chose to have her son raised by her parents. She was commissioned at the relative rank of ensign in the Nurse Corps on 6 July 1939. Following her first duty station at Naval Hospital Philadelphia, PA, she was assigned to Naval Hospital Mare Island, CA, and U.S. Naval Hospital Guam. When Guam fell to the Japanese on 10 Dec 1941, she was taken to Japan as a prisoner of war. Released on 26 Aug 1942, LTJG Jackson was exchanged with other American diplomatic staff and American nationals for Japanese diplomats and civilians. She returned to the United States aboard the Swedish exchange ship *Gripsholm*.

Upon returning home, LTJG Jackson was assigned to the following duty

stations: Public Relations Officer, Office of Naval Officer Procurement, Navy Department, Washington, DC; Nurse Corps Personnel Division, Bureau of Medicine and Surgery, Washington, DC; Senior Nurse, Fleet Hospital Number 103, Guam; and Nursing Education Program Officer, Bureau of Medicine and Surgery.

From July 1950 until June 1952, Jackson attended Columbia University, New York, where she earned her bachelor of science and master of arts in nursing administration degrees. Her subsequent assignment was as Assistant Chief Nurse at Naval Hospital Oakland, CA. In December 1953 she reported to Naval Hospital Portsmouth, VA, as Chief Nurse.

CAPT Jackson assumed the office of Director of the Navy Nurse Corps on 1 May 1954. During her tenure, she proposed a reorganization of the Nurse Corps Division at the Bureau of Medicine and Surgery, recommending the establishment of three branches: Professional Branch, Personnel Branch, and Nurse Corps Reserve Branch. She further proposed the assignment of an assistant director and advised on current policies and legislation affecting the Nurse Corps reserves. In addition, CAPT Jackson started the Nurse Corps Candidate Program.

CAPT Jackson retired on 1 May 1958 and returned to the family home-



stead in Ohio, *Lilac Hill*. Naval career decorations include the Commendation Ribbon, American Defense Service Medal, Asiatic Pacific Campaign Medal, American Campaign Medal, World War II Victory Medal, and the National Defense Service Medal.

Throughout her life and certainly throughout her Navy career, Leona Jackson had a positive impact on others. The best examples of her influence are drawn from her own words as recorded by Paul Stillwell, oral historian of the U.S. Naval Institute, and others.

The Experience of Capture. Leona Jackson described how the Japanese seized the USNH Guam: "I think the bitterest moment of my life came at sunrise when, standing in the door of the hospital library, I saw the Rising Sun ascend the flagpole where the day before the Stars and Stripes had proudly flown."⁽¹⁾ The enemy then set up a headquarters in the hospital. "They thought that if the Americans came over to retaliate they wouldn't fire on the hospital."⁽²⁾ Shortly after the landings, casualties began pouring in. Navy medical personnel were allotted one ward for tending patients as the Japanese utilized the rest of the hospital facility. "It was probably the most

amazing ward I'll ever see; we had war casualties there, and native men, women, and children; we even had a Caesarian section by way of variety." (3)

Importance of Education. With a thirst for knowledge evident throughout her life, Leona Jackson understood how education created opportunities for growth and professional credibility. During high school she considered law as well as nursing career opportunities and studied Latin for 4 years because of the medical and legal terminology based on that classical language.

"Ohio had one of the first university schools at Western Reserve. Frances Paine Bolton had endowed that school. After World War II; [I] got in the fight toward the elevation of the basic nursing degree to the baccalaureate degree when I was education officer for the Nurse Corps.

"I had more than the usual number of electives at Columbia University because of my extensive clinical background, more than the people teaching at the university." Jackson took courses in anthropology, comparative religion, and Japanese scriptures of Buddha and Shinto. New York museums and lecture series became part of her education as well.

Sense of Heritage. "The Director of Nursing at the Miami Valley Hospital School of Nursing was a graduate of Vassar and the Army School of Nursing. (The Army had a school of nursing during World War I.) The Miami Valley Hospital School of Nursing was originally a Lutheran hospital established by the clergy in Dayton, OH, for the care of the indigent sick and training of Lutheran deaconesses in nursing. This forerunner school was done in the tradition of Pastor Pleadner's nursing school in Germany, where Florence Nightingale visited. The first director of the Miami Valley Hospital School of Nursing was a graduate of the Philadel-

phia General Hospital, whose first director had been a graduate of the Nightingale school in England. So, the school had a very fine tradition in quality."

Spiritual Care...Compassion... Loyalty. "Although the school [of nursing] was completely nondenominational, you were expected to look after, if you needed to, the spiritual background of people, to help them. There were many frightened people in the hospital...they're going for surgery, and they're afraid...they're going into labor, and they're afraid...You can give them some reassurance. You have to understand them and...find out if you can what their religious background is. If you know anything about it, you can help them."

The probationary period [in nursing school] gave "the faculty time to determine whether [the student] had the kind of temperament that would go well in the world of nursing, meeting people in their times of stress. Because, believe me, you see people through some of the roughest times of their lives. Having come from a home where I had a very happy life, it was easier for me because I had a security that I could transmit to [patients] and it made a difference. It was very interesting, because, as a very young nurse, people would wait many times until I came on duty and then talk with me about the things they were worried about. And, of course, you never never betray a patient's confidence. I guess that was why I got an early top secret [clearance] when I came back from Japan because I could always keep my mouth shut. I like people, I like to talk with them, but things that were verboten were verboten."

Family and Responsibility. "[I] came from a close knit family [with] two sets of grandparents. [My] mother's great-grandfather had founded the church we attended. I had the good

fortune of being a little girl with three sets of parents who loved her but never interfered with each other. [I had] a protected childhood but [was] taught responsibility, didn't blame other people when you did things you shouldn't do, that you were responsible for your own conduct."

Humor. One of her Army patients stationed at Fairfield Air Depot and Patterson Field (any Army patients who required inpatient care received it at Miami Valley Hospital) suggested that she join the Army then said: "or the Navy...they're all in good cities, not all back in some cornfield like the Army stations."

Decision to Join the Navy. The Army's minimum height standards were 5 feet 2 inches. Since Leona Jackson was not quite 5 feet 2 inches, she applied to the Navy. "The Navy was mainly interested in what you could do professionally. It had the amount of discipline; it had the quality of care. I had, within the hospital situation, a working relationship with doctors that I had never had in another hospital, because [the doctors] were there [in the hospital].

Professional Perspective. Leona Jackson worked on Dr. Lamont Pugh's ward for 10 months. Pugh later became Surgeon General and nominated Jackson for Director of the Nurse Corps. "The situation in the Navy was that you could talk with a doctor as a professional colleague. With one nurse on the floor, the hospital corpsmen did the nursing care. When I used a young hospital corpsman with a sick patient, I worked with that corpsman on that patient to be very sure that he knew how to handle that sick patient. And I used to say to them, 'Now, one of these days you're going to be out someplace on a forward line, and you're going to have to do something, and you're going to wonder if I don't teach you now. I'm not going to be at your elbow to tell you

what to do, so you better learn it now.' And you'd be surprised how many of them told me after the war that they had thought of that when they were with the Marines.

"Because there were no antibiotics, surgery patients were divided into clean and dirty surgery [clean or uninfected wounds and dirty or contaminated wounds]. Dr. Pugh had dirty surgery. He would come down on the ward after surgery and sit down with me and he'd go over the patients and tell me exactly what he'd done. He would go over every step of that operation and exactly what he had found. And so then he knew that if an emergency came up and he was scrubbed in the OR in the process of surgery, I would be there to give that information to whomever was the officer of the day (OOD). And with that information, the OOD could move in and handle that patient until Dr. Pugh could get down from the OR. The one adverse effect was that word got around among the residents that if you went onto Dr. Pugh's ward and Mrs. Jackson suggested the way Dr. Pugh would handle that patient, you'd better handle it that way. Because if you didn't, you'd hear from Dr. Pugh when he got down from the OR."

When asked how she handled casualties and death, Leona Jackson replied: "When I've done the best that I can, then I can face it. I've left nothing unturned. This is the best that could have happened. You never let go until they've taken their last breath."

From her personnel records, Leona Jackson was described as a talented speaker and writer with an ability to hold the interest until the end of the presentation or written piece. Nurses on active duty at the time CAPT Jackson was director recall that she was especially articulate in hearings before Congress.

Although she retired 40 years ago, what kind of legacy did CAPT Leona

Jackson leave the Nurse Corps and the Navy? Perhaps the answer lies in a letter she wrote to one of her successors, Ruth Erickson, dated 8 Feb 1956:

My dear Commander Erickson:

It is now nearly two years since we all began working and planning together for the development of the Nurse Corps and the people in it. Last year I started sending a letter to each of our Reserve Nurses who was eligible for release, and in that letter I posed a number of questions which I asked each one to answer in order that we might have the benefit of their thinking before they should complete their duty agreements and accepted release, and their thinking is lost to us.

I am now ready to begin the second phase of this study in cooperative planning in which each nurse is offered an opportunity to participate, and each member of the regular Nurse Corps in the coming weeks will receive a letter from me. You as an individual have a very important contribution to make and I hope that you will think through the questions I am asking, and give me your honest and objective comments and observations on them.

When I became your director, in my message to you I indicated my belief that "a full professional career in nursing and a satisfying and happy personal life are possible within the framework of naval service, and wholly consistent with the most effective functioning of the Nurse Corps in the Medical Department, and in the Navy." It seems to me that implementation of this concept is inherent in a professional philosophy which incorporates: (1) the utilization of personnel in line with professional interests and capacities; (2) planned assignments and rotation for professional growth and career furtherance to provide: (a) professional experience and (b) in-service and out-of-service opportunities for professional education; and (3) duty assignments in

line with family ties and responsibilities.

To what extent do you consider that we are realizing that concept of nursing as we would like it to be in the Navy?

What do you consider the best and most satisfying aspects of nursing in the Navy? Of the Navy as a way of life?

What do you consider the unsatisfactory aspects of nursing in the Navy? Of the Navy as a way of life?

What factors influenced you to choose the Navy as a professional career field?

What suggestions do you have for the continuing improvement of our Corps?

What do you as an individual want and need for your continuing professional, and personal development and satisfaction in the Nurse Corps?

I shall appreciate your thinking through the questions I have posed, and I shall look forward to your reply. Your letter will be of very significant help to us in assessing our progress as individuals and as a Corps, and will provide a firm base for guiding progress toward changes of importance to the Corps and the individuals in it.

References

1. Karig W, Kelley W. *Battle Report, Pearl Harbor to Coral Sea*, p 107.
2. Karig, p 109.
3. Ibid., p 109.

Bibliography

- Biography of Captain W. Leona Jackson, Nursing Division, Bureau of Medicine and Surgery.
Hovis B, Searcy O. Personal communication; 20 March 1998.
Karig W, Kelley W. *Battle Report, Pearl Harbor to Coral Sea*. New York, NY: Farrar & Rinehart Inc; 1944.
Stillwell P. Oral history of Leona Jackson, BUMED Archives; 26 September 1986.
Stern D. *In and Out of Harm's Way*. Seattle, WA: Peanut Butter Publishing; 1996. □

CAPT Collins is attached to NR BUMED 106 and is Senior Policy Analyst, Office of Medical Affairs and Health Programs, TRICARE Management Activity, Department of Defense.

Naval Medical Research and Development Command Highlights

●Automated Environmental Heat Monitoring System for SMART Ship

Chronic exposure to heat during sustained operations can adversely affect the safety, health, and performance of personnel who must work in high heat or humid work areas. Temperatures in engineering, steam catapult, gallery, scullery, laundry, and auxiliary equipment workspaces often exceed 100°F and 50 percent relative humidity (RH). To comply with Navy standards to prevent heat stress, each high heat workspace must be measured regularly with a portable, handheld heat stress meter. This process is labor-intensive and each multistation workspace takes at least 30 minutes to complete. The time spent performing this task per year has been estimated at 2,500 man-hours (destroyer class) to 3,700 man-hours (carrier class). A research team at the Naval Health Research Center (NHRC), San Diego, CA, developed a software package to reduce this work load by automatically scanning and recording temperature measurements in a shipboard workspace. The software measures the Wet Bulb Globe Temperature (WBGT), displays the appropriate stay time for personnel, stores the data in a spreadsheet, and prints the required information on a heat stress form. A complete shipboard heat-stress survey can now be accomplished within minutes instead of hours. NHRC researchers and their industrial partners who developed the hardware (sensors, microchips, and electronic circuitry system) are integrating with WBGT sensor system in the SMART ship operational platform design. The WBGT sensor system was first tested in 1997 to assess shipboard heat stress conditions aboard an aircraft carrier in the Persian Gulf. This prototype system received favorable reviews and the research team was asked to collaborate in the project to transform USS *Rushmore* (LPD-47) into a SMART ship. Interest has spread throughout the fleet, and NHRC's system has been incorporated into the contract for the new DDG, LHD, and LPD ship construction plans. USS *Mahan* (DDG-72) will be the first ship to have the automated WBGT sensors installed in all high-heat workspaces (September 1998), and USS *BonHomme Richard* (LHD-6) plans include installing the automated

WBGT sensor system in the laundry workspace (July 1998). The man-hours saved can now be used to perform other required shipboard tasks. The development of systems to automate the numerous labor-intensive shipboard functions allows the ships' crews to focus on more complex operations. For more information on research efforts at NHRC visit their web site at www.nhrc.navy.mil.

●Rare Quadruple Malaria Infection

Malaria, a dangerous parasitic disease spread by Anopheline mosquitoes, is one of the most serious infectious diseases throughout the tropical and subtropical world. Malaria is a medical threat to U.S. troops deployed to Africa, Asia, South and Central America, and the Pacific. Navy researchers at the U.S. Naval Medical Research Unit No. 2 (NAMRU-2), Jakarta, Indonesia, recently made an exceptional finding from a blood slide collected during a field study to monitor the potential disease threat in a remote area of Irian Jaya. The particular slide was collected from a small village (population 100) near the Papua New Guinea border. From 51 slides collected, 32 were found positive for one or more of the four parasites (*P. falciparum*, *P. vivax*, *P. malariae*, and *P. ovale*) known to cause malaria. Among these 32 positive slides, one was found infected with all four parasites. Navy researchers believe this quadruple infection represents the first reported case. Previous reports have detected all four parasites in a population but not simultaneously in an individual. NAMRU-2 is a Navy infectious disease research laboratory supporting deployed U.S. military forces throughout the Asia-Pacific region. The laboratory provides the military with one of the most sophisticated forward diagnostic facilities in the world. NAMRU-2 is staffed by military and civilian scientists who provide the expertise in tropical diseases research to develop new diagnostic tests, evaluate prevention and treatment strategies, and monitor diseases threats. For more information on the Navy's malaria research program visit the Naval Medical Research Institute's web site at www.nmri.nmnc.navy.mil.

Navy Medicine 1934



BUMED Archives

A clipping from a Philadelphia newspaper reports the fate of Navy hospital ship *USS Mercy*. In the depths of the Great Depression, the "City of Brotherly Love" sought an unusual solution to its homeless problem.

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